tion of fundamental data. How, then, shall we classify characters—as "innate" and "acquired," or as responses to this or that form of nurture? This is what I meant by "clearing the field."

Of one thing I am very sure: that so long as the present classification is maintained biology will never be other than a tumbling-ground for whimsies—Lamarckian suppositions, questions as to whether nature or nurture is the stronger, and the like. When Darwin, the greatest figure that biology has produced, worked on lines of Lamarck's classification he went hopelessly wrong—as in his theory of pangenesis. His whole success was achieved when he studied, not differences between characters, but differences between individuals.

Prof. Poulton's letter in NATURE of December 23, p. 532, which I have seen since writing the above, is valuable for its line of thought and for its definitions. He begins by comparing *individuals,* and finds that their likenesses and differences are separable into those which are inherent (blastogenic) and those which are acquired (somatogenic). This is the firm ground which Darwin occupied in all his valid thinking. No one doubts the existence of these likenesses and differences, and most biologists believe that only those which are blastogenic tend to be inherited (perpetuated) by offspring. Thus chicks resemble each other innately in that they have heads and differ by acquirement as regards scars. Next, Prof. Poulton transfers the terms "inherent" and "acquired" from the likenesses and differences between individuals to the *characters* wherein they are alike or different. The head is called "inherent" and the scar "acquired." He is now comparing the characters of the same individual. This change, subtle yet vital, is precisely the cause of the chaos which prevails in biology. We are now in the morass in which Lamarck and Weismann floundered. We have departed altogether from Darwin's point of view. We have transferred the argument from the chestnut horse to the horse-chestnut. In what particular is the head more inherent and less acquired than the scar? Prof. Poulton writes: "Whenever change in the environment regularly produces appreciable change in an organism, such difference may be called an acquired character." Suppose I decide to work harder and so develop my muscles beyond the ordinary standard which they have already attained through use. In what respect is the addition more "acquired" than the ordinary development (which is usually termed "innate")? What would be the change in the environment?

I think I can give Prof. Poulton better definitions. Whenever the influence in response to which a character (*e.g.* a blacksmith's muscles, scars) develops is *glaringly* obvious, biologists call that character "acquired" and "somatogenic"; but whenever the influence is *not glaringly* obvious (*e.g.* ordinary muscles, head) that character is called "inherent" and "blastogenic." Whenever a biologist considers a character innate he reasons as if the soma and nurture had nothing to do with it. Whenever he considers it "acquired" he reasons as if the germ-plasm and nature had nothing to do with it. In all this he adheres strictly to ancient popular usage, and is not troubled by such recently discovered, recondite things as germ-plasms and germ-cells. He may talk about the latter unendingly, but they do not influence his thinking. Situated at the hub, whence radiate all sciences connected with life, biology, because of its unique classification of characters, has rendered not only itself, but also all these other studies relatively impotent—intellectually, socially, politically. It can use their data only to a minimal degree; and is not used by them at all.

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The British Committee for Aiding Men of Letters and Science in Russia.

WE have recently been able to get some direct communication from men of science and men of letters in North Russia. Their condition is one of great privation and limitation. They share in the consequences of the almost complete economic exhaustion of Russia; like most people in that country, they are ill-clad, underfed, and short of such physical essentials as make life tolerable.

Nevertheless, a certain amount of scientific research and some literary work still go on. The Bolsheviks were at first regardless, and even in some cases hostile, to these intellectual workers, but the Bolshevik Government has apparently come to realise something of the importance of scientific and literary work to the community, and the remnant—for deaths among them have been very numerous—of these people, the flower of the mental life of Russia, has now been gathered together into special rationing organisations which ensure at least the bare necessaries of life for them.

These organisations have their headquarters in two buildings known as the House of Science and the House of Literature and Art. Under the former we note such great names as those of Pavlov the physiologist and Nobel prizeman, Karpinsky the geologist, Borodin the botanist, Belopolsky the astronomer, Tagantzev the criminologist, Oldenburg the Orientalist and permanent secretary of the Petersburg Academy of Science, Koni, Bechterev, Latishev, Morozov, and many others familiar to the scientific world.

Several of these scientific men have been interviewed and affairs discussed with them, particularly as to whether anything could be done to help them. There were many matters in which it would be possible to assist them, but upon one in particular they laid stress. Their thought and work are greatly impeded by the fact that they have seen practically no European books or publications since the Revolution. This is an inconvenience amounting to real intellectual distress. In the hope that this condition may be relieved by an appeal to British scientific workers, Prof. Oldenburg formed a small committee and made a comprehensive list of books and publications needed by the intellectual community in Russia if it is to keep alive and abreast of the rest of the world.

It is, of course, necessary to be assured that any aid of this kind provided for literary and scientific men in Russia would reach its destination. The Bolshevik Government in Moscow, the Russian trade delegations in Reval and London, and our own authorities have therefore been consulted, and it would appear that there will be no obstacles to the transmission of this needed material to the House of Science and the House of Literature and Art. It can be got through by special facilities even under present conditions. Many of the publications named in Prof. Oldenburg's list will have to be bought, the costs of transmission will be considerable, and accordingly the undersigned have formed themselves into a small committee for the collection and administration of a fund for the supply of scientific and literary publications, and possibly, if the amount subscribed permits of it, of other necessities, to these Russian *savants* and men of letters.

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Society and other leading learned societies in this matter. The British Science Guild has kindly granted the committee permission to use its address.

We appeal for subscriptions, and ask that cheques should be made out to the Treasurer, C. Hagberg Wright, LL.D., and sent to the British Committee for Aiding Men of Letters and Science in Russia, British Science Guild Offices, 6 John Street, Adelphi, London, W.C.2.

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The Pea-Crab

(*Pinnotheres pisum*).

There is an apparent discrepancy between Dr. J. H. Orton's interesting description of the pea-crab in Nature of December 23, p. 533, and that given by Dr. W. T. Calman, whom he quotes. Dr. Orton attributes the impunity with which the male crab and the male-like female sustain the nip of a bivalve to their "extraordinarily strong carapace" (p. 534). On the other hand, Dr. Calman, discussing whether the Pinnotherid crabs should be reckoned commensals or parasites, observes that they "show one of the characteristics of parasites in being to some extent degenerate in their structure. The carapace and the rest of the exo-skeleton, no longer needed for protection, have become soft and membranous" ("Life of the Crustacea," p. 217).

Does not Dr. Calman's suggestion tend to confound racial degeneracy (such as environment has imposed upon Crustacea and fishes inhabiting subterranean waters, or such as has been induced by habit of life on certain parasitic species of Hemiptera) with modification of growth and adaptation of functional activity in individuals approaching parturition? If the female crab does not, after moulting within the bivalve, renew the hard carapace which protected her in obtaining entrance, the diversion of nutriment to her swelling spermothecæ can scarcely be accounted degeneracy. Rather it suggests analogy to the extreme case of *Termes bellicosus*, the so-called white ant, which is neither parasitic nor, presumably, racially degenerate, but the queen-mother of which is perennially and unintermittently parturient, with the result that, according to Smeatham, her abdomen "grows to such an enormous size that an old queen will have it increased so as to be fifteen hundred or two thousand times the bulk of the rest of her body," and twenty or thirty times the bulk of one of her worker offspring.

Dr. Orton having carried research into the pea-crab's life-history a stage further than Dr. Calman, it is to be hoped that he will soon be able to announce a complete solution.

Herbert Maxwell.

Monreith.

The Mechanics of Solidity.

In connection with the correspondence on this subject in Nature, attention may be directed to the attempts made by C. Benedicks (*Zeit. f. anorg. Chem.*, vol. xlvii., p. 455, 1905; *Ann. d. Physik*, vol. xlii., p. 153, 1913) to relate the hardness (H) to the other physical properties of the substance. He suggested that H is inversely proportional to the atomic volume (V) and to the coefficient of expansion (α), and therefore $HV\alpha$ is constant for different elements. This result includes the relation given by Mr. J. Innes (Nature, November 18). Benedicks also proposed a new formula for the characteristic frequency (ν) of an element of atomic weight A in the solid state. He assumed that the frequency is proportional to $\sqrt{(H/A)}$, and hence to $\sqrt{(1/V\alpha A)}$. If the further assumption be made that the frequency so determined is identical with the frequency given by one or other of the formulæ summarised by Mr. V. T. Saunders (Nature, December 23), other relations between the physical constants may be obtained. For example, according to the Sutherland-Lindemann formula ν is proportional to $\sqrt{(T_s/AV^{\frac{2}{3}})}$, where T_s is the melting point on the Absolute scale. Combining this with the previous result, we find $\alpha V^{\frac{1}{3}}T_s$=a constant, a relation given by Pictet in 1879.

I cannot altogether agree with Mr. Saunders (Nature, December 23, p. 534) in his omission to consider the hardness in relation to other physical constants mentioned on the ground that it is a surface effect and not a bulk effect. Although the conditions at the surface differ from those in the interior of the solid, those conditions are determined by forces of the same general character in each case. In the case of a liquid a large number of relations between surface tension or intrinsic pressure and other physical and chemical constants have been given, and Laplace's theory points the way towards the co-ordination of these results. Reference may be made to the book by Willows and Hatschek on "Surface Tension and Surface Energy" (Churchill), in which this matter is discussed, and the conclusion that *solids* ought to possess surface tension and intrinsic pressure is emphasised. Mr. Saunders, if he is to be consistent, should omit reference to the melting point as well as to the hardness value, since a pure crystalline solid melts on the surface only, and the melting point is the temperature at which the solid can exist in equilibrium in contact with its own liquid under a specified pressure.

Mr. Saunders is no doubt correct in maintaining that further attempts to relate mechanical and other physical constants of solids must be based on modern theories of the structure of the atom.

H. S. Allen.

The University, Edinburgh.

The Meteorology of the Antarctic.

In the preface to my book on Antarctic meteorology I wrote, "I was recalled to my work in India when the *Terra Nova* returned to the Antarctic in January, 1912," and the reviewer in Nature of December 23 (p. 528) has very naturally concluded that this meant that I was recalled officially by the Government of India. It is, therefore, only fair that I should state the facts. I was granted three years' leave by the Government of India, which would have been sufficient if Capt. Scott's original plan of staying only one year in the Antarctic had been carried out. When, however, it was clear that the expedition would remain two years, I told Capt. Scott that I would stay the second year and write to India asking for my leave to be prolonged. When the *Terra Nova* arrived in January, 1912, she brought me a letter from Mr. Field telling me that Dr. Walker had gone to England seriously ill, and that he himself was so unwell that he did not see how he could carry on. In these circumstances I felt it was my duty to my colleagues in India to return at once.

I think most people will understand how in such circumstances I came to write that I was "recalled" to India, but it was an unfortunate expression, and would not have been used if I had realised the inference which would be drawn from it.

G. C. Simpson.

Meteorological Office, London, December 27.

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